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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,807	02/11/2004	Manish Sharma	100202557-1	9671

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EXAMINER

AUDUONG, GENE NGHIA

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/775,807	Applicant(s) SHARMA, MANISH ET AL.	
	Examiner Gene N. Auduong	Art Unit 2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>February 10, 2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on February 11, 2004 is being considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Sasaki et al. (U.S. Pat. No. 6,191,577).

Regarding claim 1, Sasaki et al. disclose a multilayer pinned reference layer for a magnetic device as in figures 1 and 3, comprising: at least one layer of magnetic material with varying composition coupled to at least one anti-ferromagnetic material (AFM) layer, wherein the magnetic layer self-seeds and provides the appropriate crystal texture within the reference layer (col. 5, lines 25+).

Regarding claim 2, Sasaki et al. disclose the multilayer pinned reference layer of claim 1, wherein when given an appropriate anneal the AFM layer provides an exchange field greater than the coercivity of the reference layer (col. 6, lines 4+; col. 7, lines 12+).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (U.S. Pat. No. 6,191,577) in view of Lambeth et al. (U.S. Pat. No. 6,248,416).

Regarding claim 3, Sasaki et al. disclose a multilayer pinned reference layer for a magnetic device as in figures 1 and 3, comprising: at least one first layer of magnetic material; at least one second layer of magnetic material in physical contact with the first layer forming a combined magnetic layer (layer 31 and 32 in physical contact forming a combined magnetic layer, pinned layer); and at least one AFM layer coupled to the combined magnetic layer (col. 6, lines 4+; col. 7, lines 12+). Sasaki et al. do not explicitly disclose wherein the at least one first layer and the at least one second layer interact to self-seed and provide <111> crystal texture within the reference layer.

Lambeth et al. disclose a highly oriented magnetic thin films, recording media device having crystal texture within the pinned layer to provide a smaller, greater storage density, higher recording, reading quality and less cost. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sasaki's device to include the structure orientation as teaching by Lambeth's device having at least one layer interact to self-seed and provide <111> crystal texture within the reference layer to provide a smaller, greater storage density, higher recording, reading quality and less cost.

Regarding claim 4, Sasaki et al. in view of Lambeth et al. disclose the multilayer pinned reference layer having all of the limitation as of claim 3. Sasaki et al. further disclose wherein when given an appropriate anneal the AFM layer provides an exchange field greater than the coercivity the reference layer (col. 6, lines 4+; col. 7, lines 12+).

Regarding claim 5, Sasaki et al. in view of Lambeth et al. disclose the multilayer pinned reference layer having all of the limitation as of claim 3. Sasaki et al. do not specifically disclose wherein the magnetic device is a top pinned spin valve device. However, the device is a top pinned or bottom pinned spin value device based on the arrangement of the pinned layer in the device. Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to include the orientation of the pinned layer to be top or bottom due to the specific arrangement in the device.

Regarding claim 6, Sasaki et al. in view of Lambeth et al. disclose the multilayer pinned reference layer having all of the limitation as of claim 3. Sasaki et al. further including an anti-ferromagnetic material layer in contact with the second layer (figures 1 and 3).

Regarding claim 7, Sasaki et al. in view of Lambeth et al. disclose the multilayer pinned reference layer having all of the limitation as of claim 3. Sasaki et al. further disclose wherein the first layer is CoFe and the second layer is NiFe (col. 6, lines 4+; col. 8, lines 27+).

Regarding claims 8-9, Sasaki et al. in view of Lambeth et al. disclose the multilayer pinned reference layer having all of the limitation as of claim 7. Sasaki et al. further disclose wherein the first layer has a uniform thickness of between about 0 to 5 nanometers; wherein the second layer has a uniform thickness of between about 0 to 4 nanometers (col. 6, lines 4+; col. 8, lines 27+).

Regarding claims 10-13, Sasaki et al. in view of Lambeth et al. disclose the multilayer pinned reference layer having all of the limitation as of claim 3. Sasaki et al. further disclose wherein the first and second layers magnetically act as one and are predisposed to form an exchange bias with a provided anti-ferromagnetic material in the presence of an appropriate annealing process and a magnetic field; wherein the first and second layers hold a pinned magnetic field; wherein the pinned magnetic field of the multilayer pinned reference layer is between about 50 and 400 Oe; wherein the pinned magnetic field is substantially localized within the multilayer pinned reference layer (col. 6, lines 4+; col. 7, lines 12+).

Claims 14-39 contain the similar limitation as previously discussed in claims 3-13. Therefore, they are analyzed as previously discussed with respect to claims 3-13.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gene N. Auduong whose telephone number is (571) 272-1773. The examiner can normally be reached on 9-5-4, alternate second Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2827

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GA
November 17, 2005



Gene N Auduong
Primary Examiner
Art Unit 2827